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## **THE IMPACT OF THE SINGLE EUROPEAN MARKET ON THE STRUCTURE OF TRANSPORT COMPANIES IN NEW MEMBERS STATES**

### **ABSTRACT**

**Background:** The paper is devoted to analysis of the impact of the European Union's single market on the structure and demography of transport and logistic operators in new member states. The analysis takes into account primarily transport companies without any prejudice towards both the transport mode they represented as well as their legal status and ownership type. This analysis is conducted in the scope of a sufficiently long integration period of the new member states into both supply chains and value chains in the European Union.

**Methods:** Using publicly available data the authors will use standard statistical measures to assess the level of interdependence of a number of variables. Those chosen for analyses are linked to both the economic features of the European Union's single market as well as changes occurring in the structure and demography of transport and logistic operators in new member states.

**Results:** A computational analysis has proven that results vary in regard to both the chosen mode of transport as well as in country-by-country case. The examples of airport and train transport proves to be the most extreme. Both sectors seem to obtain similar results in the terms of the structure of active business entities being at the same time subject to different external pressure.

**Conclusions:** The computational analysis has proven that further research should be conducted on the actual impact of the European Union's single market on the structure and demography of transport and logistic operators in new member states.

**Keywords:** Enterprise size; Business demography; Structure of company; GVC; European Union; Single Market

## INTRODUCTION

The European Union's Common Market have been the subject of countless analyses by the Academia, business consultancy entities as well as public entities (ranging from the Directorate Generals of the European Commission to Ministries charged within the individual Member States for the transport sector). However the majority of recent research papers focuses on more prominent issues than transport companies demography.

The European Single Market supports not only the development on intra-Member States trade but also offers a strong incentive for the growth of transport and logistic operators. Thus this area of research should be further developed. A large number of external factors can be exploited to offer additional and meaningful insight into this correlation.

## LITERATURE OVERVIEW

The European Union's Single Market (or Common Market as it used to be called during the times of the European Economic Community) has been since its humble beginning in the late 1960's scrutinized by the Academia and public entities. One of the first reports dates back to 1954 [ECCS] and describes a time once forgotten – when rail transport made up to 70% of all transport. It did however mention leitmotiv of all further research made upon the Single Market – “Harmonization”. Such endeavor was also made, in possibly the most classic uptake to this topic [Stegeman 1966], clearly paving the road for further analysis.

However in recent years the majority of research concerning the Single Market should be associated with three distinctive areas.

The first of the said areas addresses Brexit and matters related to it – ranging from legal issues of market access to possible infringement of public procurement law. The number of those reviews is astonishing going well into the thousands. However they usually concentrate on the macroeconomic effects of this unprecedented development for either the UK or the EU27 [Felbermayr et al 2017, Bulmer and Quaglia 2018, Samson 2017], social and labor policies [Teague and Donaghey 2018, Hill and Bradley 2019] or individual sectors.

The second preferred topic encompasses policies needed to enhance and deepen the European Single Market itself. Please be advised that this subject is a regular one, however it does prove its ever growing and changing face: from unequal treatment of transport companies from “new” and “old” member states [Patorska and Lauresh 2015, Lewandowski 2016, Zauner 2004]

or from a more political and operational point of view [Aussilloux et al 2017, Micossi 2016, Mion and Ponattu 2019, Vukovic 2019].

The third dimension of pertinent analyses deals with the impact of the single market on either individual transport companies or logistic operators (through a number of case studies) or chosen modes of transport [Mindur and Sierpiński 2018, Laroche et al 2017, Pelkmans 2011].

This clearly shows a need for more in-depth analysis of the impact of the European Single Market on the demography of business entities actives as transport and logistic operators.

**MARKET OPENESS**

Macroeconomic literature usually assesses the general market openness by using the overall sum of a countries total exports and total imports (including both goods and services). The second stage of such an exercise usually consists of assessing the ratio of those values to the GDP of analyzed countries. Usually the higher the ratio – the more open an economy is considered to be.

In the case of the countries that joined the European Union in the successive waves of enlargement in the 21<sup>st</sup> century, the impact of becoming a part of the single market should be described as clearly positive. The level of market openness of all then-candidate countries has increased (albeit to a different extent). Please refer to the figure below.

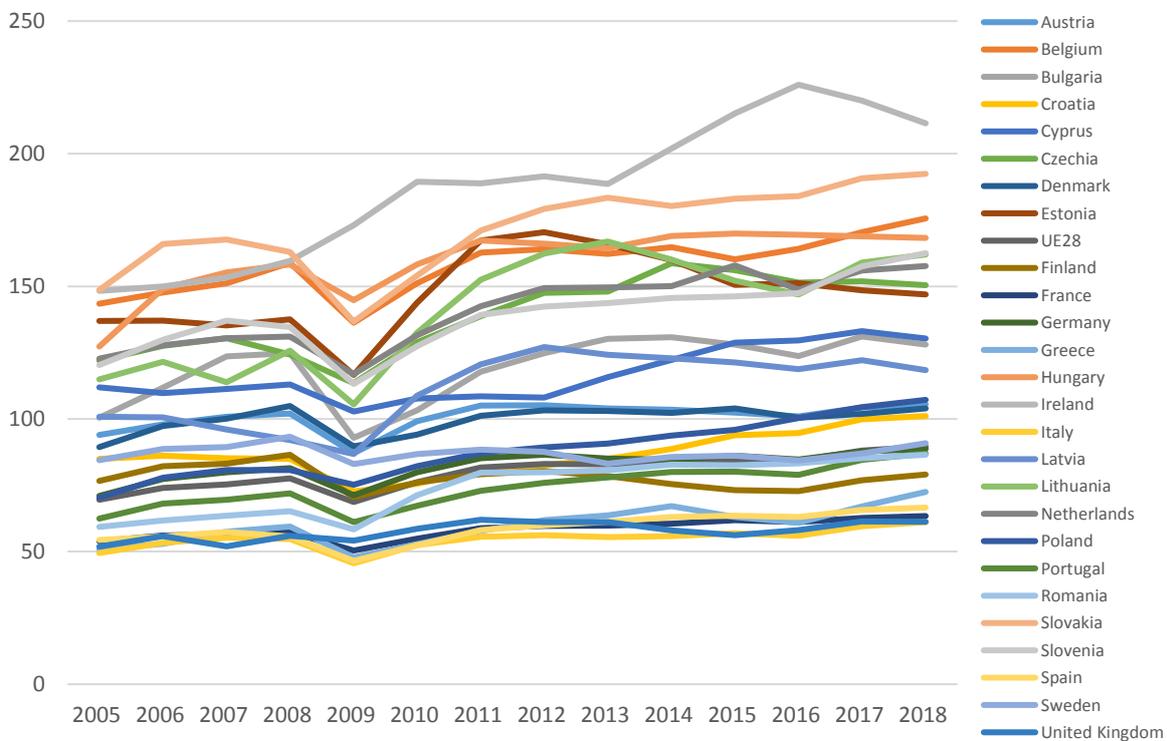


Fig. 1. Share of the sum of total exports and total imports in the respective countries GDP\* (in percent).

Source: Authors computations based on Eurostat data [nama\_10\_gdp].

\* - Please note that for clarification purposes data for Luxembourg and Malta were omitted due to the respective ratios attained by them.

However the reader should also remember that market openness can be influenced by external factors, such as macroeconomic imbalances induced by economic downturns. But even taking into account recent economic developments (i.a. the 2008-2009 and 2012-2013 crisis in some of the EU28 Members States) it is clearly evident that the growth is indeed strong across different countries. The only country that did not recover from the 2008-2009 crisis (in terms of foreign trade) was Malta. However in that particular case some additional factors could have also influenced this result. Please refer to the figure below for the entire dataset.

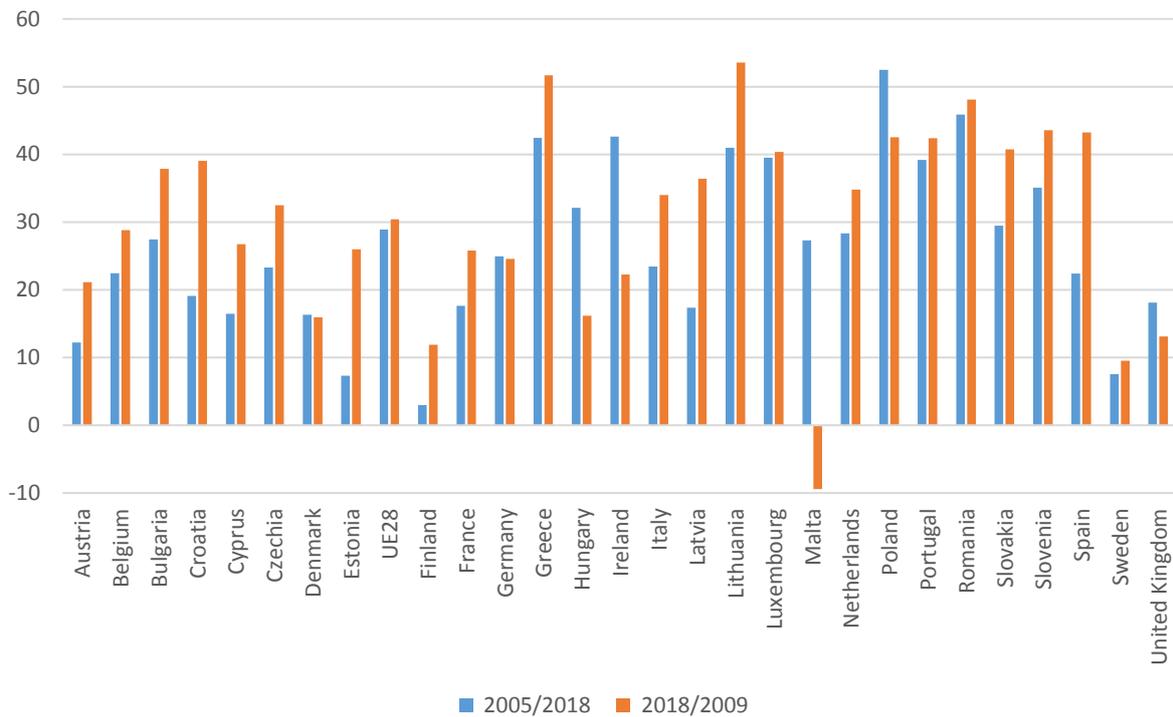


Fig. 2. Change of the sum of total exports and total imports in the respective countries GDP (in percentage points) in two time periods: 2005 – 2018 and 2009 – 2018.

Source: Authors computations based on Eurostat data [nama\_10\_gdp].

However a more thorough examination should be given to the intra-European trade in goods. This would serve to both showcase the increasing interdependence of Member States through the development of the European Single Market but also give insight into the transport and logistic operators market. In the majority of cases there is an increase in the ratio of total imports and exports from other EU28 states to their respective GDP figures. The few exceptions to this general trend are i.a. the United Kingdom or Belgium. In the case of Member States that joined the Single

Market in or after 2004 – all have seen an increase of the said metric. The results are shown in Fig. 3.

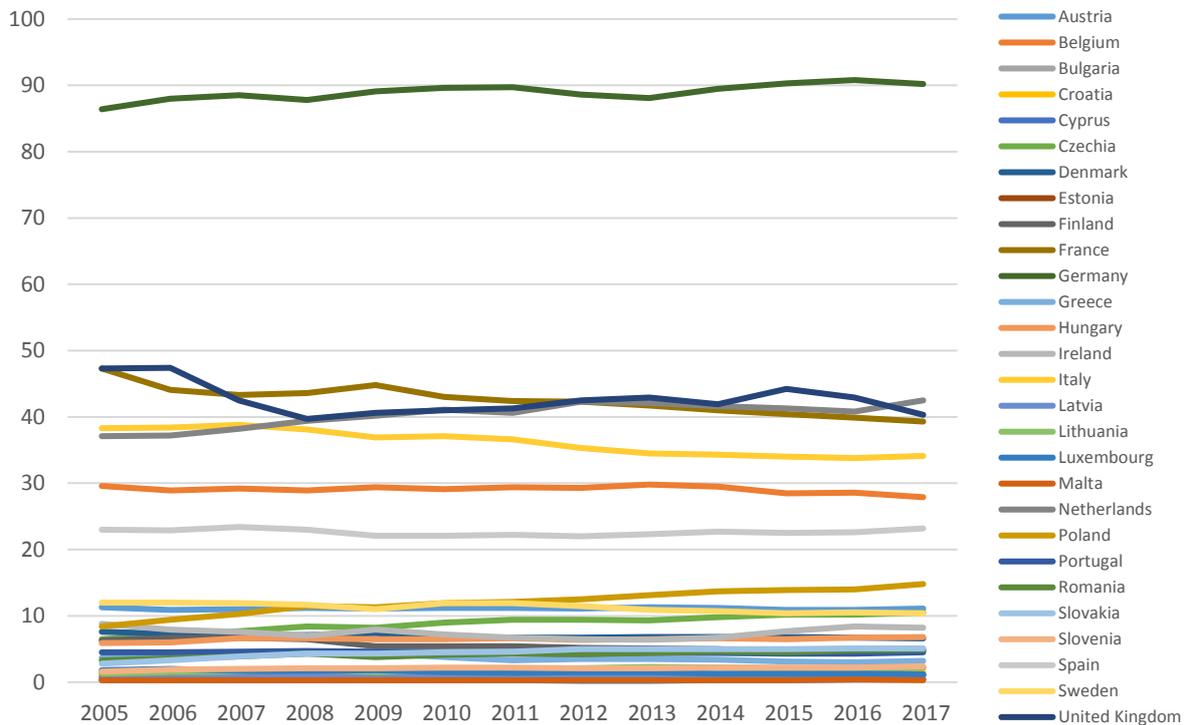


Fig. 3. Sum of total exports and total imports of goods from UE28 Member States (in percent of GDP).

Source: Authors computations based on Eurostat data [nama\_10\_gdp].

### BUSINESS DEMOGRAPHY

The Eurostat database does not offer a fully-fledged dataset on the birth and deaths of enterprises, taking into account the detailed information concerning their NACE Rev. 2 classification and their size. However using data from different source (national statistical offices) would also be problematic. Only a handful of them do publish statistics of newly-born and liquidated enterprises using NACE Rev 2 Groups and Classes. Additionally publicly available datasets usually do not provide a very detailed classification concerning the actual size-class of the business entity.

In order to provide high quality data for further analysis, both data for newly-born and liquidated companies will be presented for entities that are employing more than 10 persons. This will allow to rule out any violent one-time events that could influence the average business demography trends.

The following two tables present basic data concerning the minimum, average and maximum number of business entities that were created in the analyzed Member States. Please be advised

that the provided data covers only NACE Rev 2 the five divisions (n° 49 – 53) constituting the H Section (Transportation and Storage).

Table 1. Birth of enterprise (>10 employees of more) for the years 2008 – 2017 by mode of transport

		Transportation and storage	Air transport	Land transport and transport via pipelines*	Postal and courier activities	Warehousing and support activities for transportation	Water transport
		H	51	49	53	52	50
Bulgaria	MIN	14,0	0,0	11,0	0,0	1,0	0,0
	AVG	24,4	1,0	18,2	1,0	3,6	1,0
	MAX	68,0	2,0	53,0	6,0	9,0	1,0
Croatia	MIN	6,0	0,0	5,0	0,0	0,0	0,0
	AVG	9,8	1,0	8,0	0,0	1,0	1,0
	MAX	14,0	1,0	11,0	1,0	2,0	1,0
Cyprus	MIN	1,0	0,0	0,0	0,0	0,0	0,0
	AVG	3,3	0,0	1,0	0,0	2,0	0,0
	MAX	6,0	1,0	5,0	1,0	5,0	1,0
Czechia	MIN	7,0	0,0	5,0	0,0	0,0	0,0
	AVG	17,6	0,0	14,0	0,0	4,0	0,0
	MAX	45,0	1,0	30,0	1,0	15,0	1,0
Estonia	MIN	1,0	0,0	0,0	0,0	0,0	0,0
	AVG	1,7	0,0	1,0	0,0	1,0	0,0
	MAX	4,0	1,0	3,0	1,0	2,0	0,0
Hungary	MIN	12,0	0,0	8,0	0,0	1,0	0,0
	AVG	27,4	0,0	14,8	4,0	7,7	0,0
	MAX	51,0	1,0	29,0	10,0	18,0	0,0
Latvia	MIN	5,0	0,0	5,0	0,0	0,0	0,0
	AVG	15,1	0,0	10,6	1,0	2,0	0,0
	MAX	24,0	1,0	20,0	2,0	8,0	1,0
Lithuania	MIN	11,0	0,0	8,0	0,0	1,0	0,0
	AVG	24,2	0,0	18,0	2,0	4,2	0,0
	MAX	39,0	1,0	29,0	6,0	9,0	1,0
Malta	MIN	0,0	0,0	0,0	0,0	0,0	0,0
	AVG	0,0	0,0	0,0	0,0	0,0	0,0
	MAX	3,0	1,0	2,0	0,0	2,0	0,0
Poland	MIN	50,0	0,0	29,0	0,0	10,0	0,0
	AVG	92,4	1,0	70,0	3,0	17,0	0,0
	MAX	172,0	2,0	145,0	6,0	30,0	2,0
Romania	MIN	38,0	0,0	22,0	4,0	5,0	0,0
	AVG	62,4	1,0	43,0	6,0	10,2	1,0
	MAX	94,0	2,0	72,0	12,0	16,0	2,0
Slovakia	MIN	12,0	0,0	7,0	0,0	3,0	0,0
	AVG	22,2	0,0	16,9	0,0	4,6	0,0
	MAX	60,0	1,0	44,0	1,0	14,0	0,0
Slovenia	MIN	1,0	0,0	1,0	0,0	0,0	0,0
	AVG	3,1	0,0	2,1	0,0	1,0	0,0

	MAX	6,0	1,0	5,0	1,0	2,0	0,0
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\* - Data obtained from national statistical office confirm that no pipeline operator was created during the analyses time period.

Source: Authors computations based on Eurostat data [bd\_9bd\_sz\_cl\_r2].

Table 2. Deaths of enterprise (>10 employees of more) for the years 2008 – 2017 by mode of transport

		Transportation and storage	Air transport	Land transport and transport via pipelines*	Postal and courier activities	Warehousing and support activities for transportation	Water transport
		H	51	49	53	52	50
Bulgaria	MIN	27,3	0,0	22,6	1,0	3,0	0,0
	AVG	11,0	0,0	10,0	0,0	0,0	0,0
	MAX	69,0	2,0	58,0	4,0	8,0	1,0
Croatia	MIN	7,0	0,0	4,0	0,0	2,0	0,0
	AVG	0,0	0,0	0,0	0,0	0,0	0,0
	MAX	18,0	1,0	13,0	2,0	11,0	1,0
Cyprus	MIN	1,0	0,0	0,0	0,0	0,0	1,0
	AVG	0,0	0,0	0,0	0,0	0,0	0,0
	MAX	3,0	1,0	3,0	0,0	2,0	2,0
Czechia	MIN	16,1	0,0	12,5	0,0	4,0	0,0
	AVG	5,0	0,0	3,0	0,0	0,0	0,0
	MAX	38,0	0,0	35,0	0,0	9,0	1,0
Estonia	MIN	5,8	0,0	3,9	0,0	2,0	0,0
	AVG	1,0	0,0	1,0	0,0	0,0	0,0
	MAX	15,0	0,0	13,0	1,0	3,0	1,0
Hungary	MIN	54,2	0,0	35,7	3,6	13,7	0,0
	AVG	27,0	0,0	17,0	1,0	6,0	0,0
	MAX	122,0	0,0	81,0	11,0	32,0	1,0
Latvia	MIN	15,0	0,0	11,3	0,0	4,0	0,0
	AVG	3,0	0,0	2,0	0,0	0,0	0,0
	MAX	43,0	1,0	37,0	1,0	19,0	1,0
Lithuania	MIN	36,6	0,0	27,8	0,0	5,9	0,0
	AVG	19,0	0,0	12,0	0,0	2,0	0,0
	MAX	88,0	1,0	79,0	3,0	12,0	1,0
Malta	MIN	0,0	0,0	0,0	0,0	0,0	0,0
	AVG	0,0	0,0	0,0	0,0	0,0	0,0
	MAX	1,0	0,0	0,0	0,0	1,0	0,0
Poland	MIN	77,0	0,0	63,0	1,0	11,0	0,0
	AVG	0,0	0,0	0,0	0,0	0,0	0,0
	MAX	133,0	3,0	118,0	5,0	21,0	1,0
Romania	MIN	38,0	0,0	29,0	2,0	5,0	1,0
	AVG	0,0	0,0	0,0	0,0	0,0	0,0
	MAX	104,0	2,0	76,0	5,0	19,0	2,0
Slovakia	MIN	21,6	0,0	16,1	0,0	4,2	0,0
	AVG	12,0	0,0	8,0	0,0	2,0	0,0
	MAX	37,0	2,0	30,0	2,0	12,0	0,0
Slovenia	MIN	2,0	0,0	1,0	0,0	1,0	0,0
	AVG	0,0	0,0	0,0	0,0	0,0	0,0

	MAX	4,0	0,0	4,0	0,0	2,0	0,0
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\* - Data obtained from national statistical office confirm that no pipeline operator was created during the analyses time period.

Source: Authors computations based on Eurostat data [bd\_9bd\_sz\_cl\_r2].

Data provided in both aforementioned tables clearly show that three NACE Rev 2. divisions of the transportation and storage section stand out in both the number of newly-born and liquidated business entities: air transport, water transport as well as postal and courier activities. In those three cases the number of change in the population (of business entities that employed more than 10 persons) was very low (close to either 1 or 2 entities). Furthermore a significant number of countries (among the analyzed population) did not see any movement in those NACE Rev . 2 divisions.

However the creation and liquidation of business entities, even though itself an informative measure, shouldn't be analyzed on its own. It should be supplemented with the survivability rates of business entities (once more taking into account only business entities that employ more than 10 persons) . Eurostat data provides five rates (ranging from 1-year survival rate to 5-years) that describe statistics concerning the ability of enterprises to survive market pressure. The most widely used is the one that describe the probability of surviving the first year of a company. Management literature clearly indicates that the first year of operation is clearly the most important one. It describes in an uniform manner the management skills and the ability to exploit market opportunities.

In our opinion it should be used alongside the long-term survivability rate (number of enterprises in the reference period t newly born in t-5 having survived to t divided by the number of enterprise births in t-5). Taking that into account will provide the analysis with a proxy of the favorable conditions that should be derived from the European Single Market.

Results of the aforementioned analysis are presented in Figure 4 (below). Please note that is represents yearly results for the different NACE Rev 2 Divisions (and total economy) for the analyzed Member States. Furthermore is uses the two above mentioned survivability ratios. The results tends to be highly consistent for the general economy with traditional empirical results (showing a high differentiation of the outcomes). In the case of land transport we see a large share of high survivability both in the first year as well as after five years of operations. This should be linked with the size of the enterprises and entry costs concerning rail transport (in the case of road transport the result should be significantly lower).

The outcomes for both water and air transport are not very informative, since the number of effective creation/liquidation of business entities is very limited in all analyzed Member

States. It should also be noted that in the majority of cases air transport shows a higher survivability rate than the one observed in the case of the former sector. However water transport includes both inland as well as sea transport, which could influence the outcome.

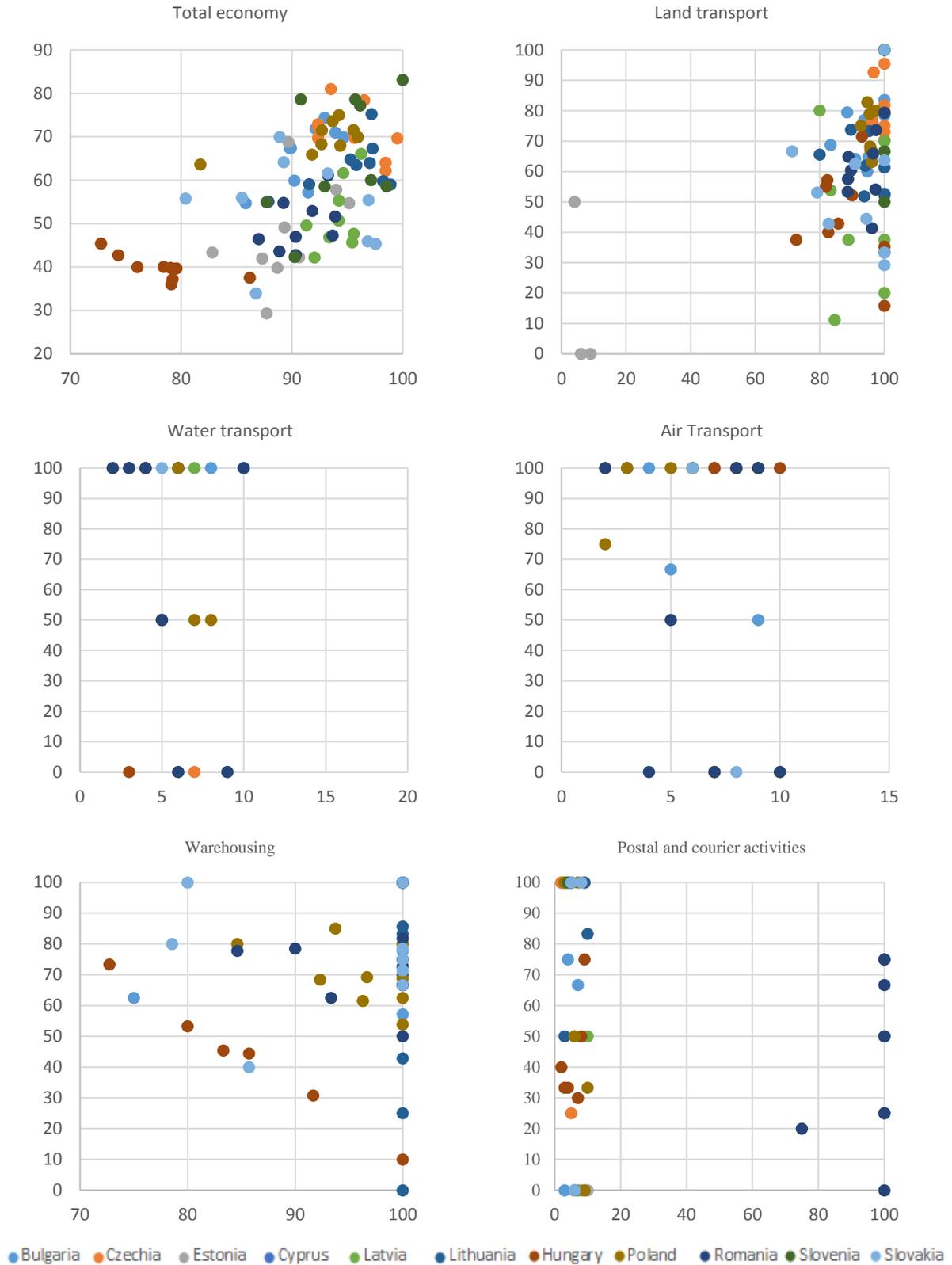


Fig. 4. Survival rates of companies (>10 employees, in percentage point, Y Axis: 5<sup>th</sup> Rate; X Axis: 1<sup>st</sup> Rate)

Source: Authors computations based on Eurostat data [nama\_10\_gdp].

Interesting results can be found in warehousing services as well as postal and courier activities. The former show strong resilience during the first year, while the latter exhibit high 5-year survivability rate. The second result appears somewhat counterintuitive, since a strong competition exists on this market.

**COMPUTATIONAL EXERCISE**

Before conducting the correlation analyzed some of the general measures representing the development of the European Single Market were tested in order to provide the basis for further tests. Among them were three macroeconomic indicators:

1. The share of total import and total export in GDP,
2. The share of total import and total export of goods in GDP,
3. The share of total import and total exports of goods from intra-EU28 trade in GDP.

In the end, statistical inference has proven the last of the three above-mentioned indicators to be the most eligible for further use. The correlation rate was computed for each of the analyzed Member States using the following variables:

1. Value added from  $i_{\text{mode of transport}}$
2. Liquidation of business entities (>10 employees) from  $i_{\text{mode of transport}}$
3. Newly born business entities (>10 employees) from  $i_{\text{mode of transport}}$

The authors have assumed that the correlation is linear and thus could be computed using Pearson’s correlation coefficient, taking the form:

$$r_{XY} = \frac{cov(X,Y)}{\partial_X \partial_Y} (1)$$

Please be advised that the aforementioned assumption was further demonstrated using a distribution graph (omitted in the article). Additionally, the author have established the force of the correlation coefficient, as described in the table below.

Table 3. Pearson’s Coefficient Value by strength

Coefficient value	$ r =0$	$0 <  r  \leq 0,1$	$0,1 <  r  \leq 0,3$	$0,3 <  r  \leq 0,5$	$0,5 <  r  \leq 0,7$	$0,7 <  r  \leq 0,9$	$0,9 <  r  \leq 1,0$
Correlation strength	None / Non-existent	Dim / Faint	Weak	Average	High	Very high	Almost full

Source: Authors choice.

The availability of Pearson’s Correlation Coefficient made it possible to prepare a matrix of the computed values. They could also be supplemented with a heat map corresponding to the

rates described in Table 3. Please be advised, however, that in a number of cases the correlation coefficient values could not be fully computed due to lacking data on national level. This was especially problematic in the case of Croatia, Malta and to a lesser extent – Slovakia and Slovenia. The full results of the computation of the correlation coefficient matrix are presented in the table below (Table 4).

Table 4. Correlation coefficient matrix and simplified heat map of the computation outcomes.

		Transportation and storage			Air transport			Land transport*			Postal and courier activities			Warehousing and support activities			Water transport		
		(A)	(B)	(C)	(A)	(B)	(C)	(A)	(B)	(C)	(A)	(B)	(C)	(A)	(B)	(C)	(A)	(B)	(C)
BG	(1)	0,71			0,63			0,61			-0,55			0,77			0,12		
	(2)	-0,50	-0,85		-0,52	-0,38		-0,50	-0,79		-0,03	-0,27		-0,51	-0,65		-0,31	-0,02	
	(3)	-0,46	-0,77	0,53	-0,02	0,05	0,31	-0,51	-0,76	0,54	-0,15	0,57	-0,04	-0,32	-0,70	0,46	0,04	0,37	-0,23
CR	(1)	0,21			##			-0,44						-0,61			-0,44		
	(2)	-0,19	-0,47		##	##		-0,26	0,16					0,08	-0,04		-0,4	-0,04	
	(3)	-0,63	0,04	0,22	##	##	##	-0,63	0,13	0,26				-0,29	0,39	-0,02	-0,65	0,36	0,27
CY	(1)	-0,52			0,53			-0,44			-0,29			-0,36			-0,34		
	(2)	-0,12	0,06		0,03	0,14		-0,48	0,34		##	##		0,11	0,22		0,35	-0,01	
	(3)	-0,20	-0,14	0,22	-0,31	0,18	-0,12	-0,04	-0,08	0,04	0,13	0,01	##	-0,22	0,27	0,58	0,13	0,16	-0,08
CZ	(1)	0,36			-0,83			0,00			0,06			0,63			-0,19		
	(2)	0,04	-0,48		##	##		0,08	-0,54		##	##		-0,12	-0,55		0,2	-0,42	
	(3)	-0,26	-0,87	0,52	-0,14	0,39	##	-0,20	-0,50	0,43	-0,20	0,12	##	-0,37	-0,83	0,80	-0,21	-0,27	-0,08
EE	(1)	0,65			-0,47			0,59			-0,02			0,68			0,33		
	(2)	0,12	-0,44		##	##		0,09	-0,49		0,82	-0,22		-0,11	-0,39		-0,12	-0,21	
	(3)	-0,19	-0,34	0,57	0,45	-0,26	##	-0,48	-0,42	0,17	0,09	-0,33	0,03	0,10	-0,10	0,01	##	##	##
HU	(1)	0,77			0,50			0,38			-0,06			0,81			-0,35		
	(2)	-0,49	-0,77		##	##		-0,55	-0,33		-0,41	0,22		-0,31	-0,57		0,21	-0,18	
	(3)	-0,40	-0,68	0,57	0,18	-0,32	##	-0,27	-0,36	0,49	-0,37	0,21	0,55	-0,54	-0,44	0,38	##	##	##
LV	(1)	0,57			-0,55			-0,09			0,29			0,22			-0,56		
	(2)	-0,20	-0,57		-0,40	0,37		-0,16	0,22		-0,20	-0,25		-0,16	-0,05		-0,28	0,3	
	(3)	-0,59	-0,48	0,57	0,02	-0,44	-0,12	-0,58	0,42	0,58	0,24	0,16	0,51	-0,44	0,02	0,47	-0,5	0,49	-0,16
LT	(1)	0,82			-0,43			0,38			0,14			0,51			0,02		
	(2)	0,13	-0,34		-0,10	-0,07		0,23	0,15		0,26	0,17		-0,57	-0,13		0,02	0,02	
	(3)	0,14	-0,32	0,74	0,18	0,25	-0,30	0,04	0,19	0,61	0,37	0,17	0,78	0,23	0,22	0,36	-0,35	-0,18	-0,12
MT	(1)	-0,83			##			0,82			##			##			0,77		
	(2)	-0,35	0,09		##	##		##	##		##	##		##	##		##	##	
	(3)	0,21	-0,04	0,40	##	##	##	-0,03	-0,02	##	##	##	##	##	##	##	##	##	##
PL	(1)	0,98			0,06			0,08			0,14			0,13			0,16		
	(2)	-0,58	-0,59		0,05	-0,58		-0,59	0,01		0,26	0,17		-0,39	0,22		0,11	0,38	
	(3)	-0,66	-0,60	0,57	0,04	-0,56	0,73	-0,63	-0,01	0,47	0,37	0,17	0,78	-0,67	0,10	0,73	-0,67	-0,31	-0,07
RO	(1)	0,27			0,02			0,06			0,60			0,52			0,86		
	(2)	0,02	-0,44		0,02	0,53		0,05	-0,58		-0,04	-0,27		-0,04	-0,21		-0,21	0,07	
	(3)	-0,08	-0,56	0,68	0,04	0,21	0,26	0,04	-0,56	0,73	-0,48	-0,37	0,41	-0,39	-0,56	0,27	0,31	0,57	0,32
SK	(1)	0,76			0,31			0,72			0,65			0,75			0,27		
	(2)	-0,57	-0,71		0,07	-0,30		-0,50	-0,71		-0,33	0,03		-0,67	-0,57		##	##	
	(3)	-0,43	-0,60	0,68	-0,35	0,40	-0,18	-0,34	-0,55	0,54	-0,46	-0,54	0,02	-0,63	-0,69	0,86	##	##	##
SL	(1)	0,75			-0,40			0,77			-0,37			0,75			-0,62		
	(2)	-0,20	-0,24		##	##		0,16	-0,03		##	##		-0,66	-0,46		##	##	
	(3)	-0,79	-0,67	0,39	-0,38	0,02	##	-0,85	-0,69	0,07	-0,24	0,26	##	-0,19	-0,14	-0,04	##	##	##

## - Division by zero.

(1) Value Added, (2) Liquidation, (3) Newly Born

(A) Sum of imports and exports of goods, (B) Value Added, (C) Liquidation

\* - Data obtained from national statistical office confirm that no pipeline operator was created during the analyses time period.

Source: Authors computations based on Eurostat data [bd\_9bd\_sz\_cl\_r2] [ext\_lt\_intratrd][nama\_10\_a64][nama\_10\_gdp].

The results of the computation exercise clearly show that in the majority of cases there is clearly a correlation between having access to the European Single Market and the development perspectives of different modes of transport. The table below present the abbreviated results for the major modes of transport.

Table 5. Correlation matrix and simplified heat map of the results

Pearson's Coefficient Value	Transportation and storage			Air transport			Land transport			Postal and courier activities			Warehousing and support activities			Water transport		
	(A)	(B)	(C)	(A)	(B)	(C)	(A)	(B)	(C)	(A)	(B)	(C)	(A)	(B)	(C)	(A)	(B)	(C)
$r > 0,5$	16	12	9	5	3	1	12	8	5	4	2	4	16	8	4	6	1	0
$r > 0,3$	7	8	2	10	6	1	9	7	3	8	2	1	7	4	4	10	6	1
Other results	16	6	2	14	9	5	17	10	4	18	15	3	13	12	4	15	11	7

(A) Sum of imports and exports of goods, (B) Value Added, (C) Liquidation.

Source: Authors computations based on Eurostat data [bd\_9bd\_sz\_cl\_r2] [ext\_lt\_intratrd][nama\_10\_a64][nama\_10\_gdp].

However looking more closely into the results we can clearly see that a very strong interdependence can be seen for the general transportation and storage sector. However each of its five divisions does react to some extent more uniquely to the European Single Market as a development opportunity:

1. The Transportation and storage section shows strong correlation between the European Single Market and all of the analyzed variables. Please note that in this regard this NACE Rev 2 section shows close resemblance to the so-called total-economy population, that also exhibit similar results. However at the national level we can see strong differences in the values of the correlation coefficient – as a number of countries shows a strong negative linear relation (i.a. Malta), while the majority shows rather a positive linear relation. Please note that in total, a medium to strong linear correlation was shown in almost 60% of the computed cases.
2. The Air Transport division shows the weakest linear relation, as in slightly less than 52% of the cases the computations proved a medium to strong correlation. Additionally this sector experienced the highest shortage of data (total lack of data in the case of Croatia and Malta, and additional data shortages in the case of four other countries). Please note that this division exhibits the lowest interdependence of all the analyzed divisions. National level computation results shows also a relatively low variability (at least in contrast to other transport modes).

3. The Land transport and transport via pipeline division exhibits a relatively strong interdependence of the analyzed variables. However due to the structure of Eurostat data (presented on the division level and not more thoroughly), this dataset omits a large variation that should be associated with road transport).
4. The postal and courier activities division exhibits the weakest computational outcomes among all the analyzed sectors. At the same time it shows among the strongest linear relation in the variable of business entity liquidation. This results is fully in line with empirical experience – the number of courier companies in Member States that joined the UE28 in the 2000's has slightly diminished due to rising competition (a factor strongly correlated with the European Single Market). Please note that this sector also experiences issues concerning the availability of data.
5. The Warehousing and support activities for transportation division exhibits among the strongest linear relation between the analyzed variables. However please note that national outcomes do tend to show a slightly above ordinary variation of the results. This shows that a more in-depth analyzes is needed (also taking into account additional division-specific variables or trends).
6. The Water transport division shows to some extent a strong resemblance to the Air transport division, in the terms of the linear relation. However this division also exhibits the lowest strength of the interdependence between the liquidation of business entities and membership in the European Single Market. Please note however that this is to some extents correlated with the fact that both inland waterways transport and sea transport are subject to older and broader regulation than the European Single Market.

### **CONCLUSIVE REMARKS**

The paper shows through computed relations that the transport and storage sector (as well as making it up NACE Rev 2 divisions) exhibit at least moderate to strong linear correlation with European Single Market. The analysis was conducted only for Member States that joined the European Union from the 2000's forward. The computed outcomes show that national results could vary as a function of other variables than those used by the authors. Even though the obtained results could be seen as satisfactory despite considerably strong data quality issues, there is still a challenge concerning the operationalizations on a sectoral basis. Therefore, we suggest that further analyses should be conducted in the future using more in-depth datasets.

This challenge is especially comprehensive in the sectors that are being regulated either on a more global scale (as it is in the case of the aviation industry) or are subject to longer market integration trends (as it in the case of water transport).

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